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Ordnance Overview

What Is MEC? (Munitions and Explosives of Concern)

This term, distinguishes specific categories of military munitions that may pose unique explosives safety risks, means:

(a) Unexploded Ordnance (UXO) as defined in 10 U.S.C. 2710(e)(9);

(b) Discarded Military Munitions (DMM), as defined in 10 U.S.C. 2710 (e)((2);

(c) Munitions constituents (MC) (e.g. TNT, RDX) as defined in 10 U.S.C. 2710 (e)(3), present in high enough concentrations to pose an explosives hazard.

Extracted from ASA (I&E) Memo of 21 Apr 2005, Munitions Response Terminology.

What are Military Munitions

- Military Munitions: Military munitions means all ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the Department of Defense, the Coast Guard, the Department of Energy, and the National Guard. The term includes confined gaseous, liquid, and solid propellants; explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives, and chemical warfare agents; chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges; and devices and components thereof.
- This term does not include wholly inert items; improvised explosive devices; and nuclear weapons, nuclear devices, and nuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) have been completed. (10U.,S.C. 101(e)(4)(A) through (C)).

Extracted from ASA (I&E) Memo of 21 Apr 2005, Munitions Response Terminology.

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What Is Unexploded Ordnance (UXO)?

Military munitions that

(a) have been primed, fuzed, armed, or otherwise prepared for action;

(b) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material;

(c) remain unexploded whether by malfunction, design or any other cause. (10 U.S.C. 101(e)(5)(A) through (C))

Extracted from ASA (I&E) Memo of 21 Apr 2005, Munitions Response Terminology.

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General Components of Ordnance

Generally speaking, all ordnance: Artillery, Bombs, Mines, Grenades Sub-munitions have these same components. They are just configured differently, larger, smaller, and differing types of explosives.

Fuze
contains Primary exp

Booster
contains Secondary exp

Body
typically non-explosive

Filler
contains Secondary exp

Explosives Classifications

- Low Explosive
  - Deflagrates rather than detonates
  - Burn rate is less than 3,300 feet per second
- High Explosive
  - Detonates rather than deflagrates
  - Burn rate exceeds 3,300 feet per second
  - Further subclassified according to relative sensitivity

High Explosives

- Initiating (or **Primary**) Explosives
  - Lead azide
  - Silver azide
  - Tetrazene
  - Lead styphnate
  - Mercury fulminate
  - Diazodinitrophenol

High Explosives (cont.)

- **Secondary** (Boosting and Bursting) Explosives
  - TNT
  - RDX compositions
  - Amatol
  - Explosive D
  - Picratol
  - Pentolite
  - Cyclotols
  - Octols

TNT

Octols, LX-14 Explosives

Pyrotechnics

- Devices that produce heat and strong light
- Used for illumination, signaling, and simulation of battle noises and effects
- Examples of use include:
  - Flares
  - Signals
  - Training simulators

Incendiaries

- Flammable materials used as fillers for the purpose of destroying a target by fire
- Examples of incendiaries include:
  - Red or white phosphorus
  - Napalm
  - Thermite
  - Magnesium
  - Zirconium

Propellants

- Explosive materials that are designed to provide controlled propulsion for a projectile
- Modern propellants are typically mixtures of a number of explosive or reactive materials

Propellants (cont.)

- Examples of materials that have been or are used as propellants, alone or in mixtures
  - Black powder
  - Nitrocellulose
  - Nitroglycerin
  - Nitroguanidine
  - Ammonium perchlorate
  - Ammonium picrate
  - Aluminum
  - RDX

Fuzes

- Fuzes function to initiate the chain of events leading to the detonation of the munition or the firing of the propellant charge.
- In order to function, a fuze must be armed.
- UXO found on ranges shall be assumed to have an armed fuze.

Projectiles

- Include both separate loading projectiles and fixed ammunition projectiles
- Are of various types and may be base fuzed, nose fuzed, or both
- 20 mm or larger
- Include:
  - Guns (artillery and aircraft)
  - Howitzers
  - Mortars
  - Recoilless rifles

Rocket-Type Ammunition

- Includes both guided missiles and rockets
- Guided missiles: unmanned, self-propelled munitions whose flight path is controlled remotely by homing systems, or by inertial or programmed guidance within
- Rockets: unmanned, self-propelled unguided munitions consisting of a warhead, a rocket motor, and a flight stabilizer

Chemical Warfare Materiel (CWM)

An item configured as a munition containing a chemical substance that is intended to kill, seriously injure, or incapacitate a person through its physiological effects.

Normally includes the chemicals V- and G- series nerve agents, H-Series blister agent, and Lewisite in other than munitions configurations.

Due to their hazards, prevalence, and military-unique application, chemical agent identification sets (CAIS) are also considered CWM.

Chemical Agent Identification Sets (CAIS)

More than 100,000 CAIS were produced for use by all branches of the military between the 1930s and the 1960s. In the late 1970s and early 1980s, a program to destroy CAIS was successfully completed at Rocky Mountain Arsenal. In this operation, 21, 458 CAIS were destroyed. The remaining 80,000 sets are thought to have been primarily expended through training, although some were disposed of by the military. In the past, one of the standard and approved procedures for disposing of CAIS was burial.